HWG | HARRIS, WILTSHIRE & GRANNIS LLP

18 December 2018

Ex Parte

Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Expanding Flexible Use of the 3.7 to 4.2 GHz Band; GN Docket No. 18-122

Dear Ms. Dortch:

On 11 December 2018, ABS Global Ltd., Hispasat S.A., and Embratel Star One S.A, collectively the small satellite operators (SSOs), filed Reply Comments in this proceeding. The thrust of those comments was that clearing a portion of the C-band through a market-based mechanism could have merit, but that the proposal advanced by the C-Band Alliance was self-serving, inequitable and anything but market-based. Thus, the SSOs outlined an alternative approach that would fairly allocate proceeds from a market-based mechanism among: (i) earth station operators; (ii) U.S. taxpayers; and (iii) all eight satellite operators authorized to provide C-band satellite services in the United States.

You will find attached a PowerPoint presentation that demonstrates how the SSOs' alternative approach would work, and indicates how various parties – including U.S. taxpayers – might be compensated in an fair and equitable market-based transition.

Please let me know if you have any questions about this filing.

Sincerely,

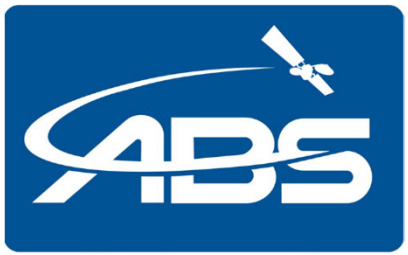
Scott Harris

Scott Blake Harris
Counsel to the Small Satellite Operators

ATTACHMENT

REPURPOSING C-BAND SPECTRUM:
AN EQUITABLE DISTRIBUTION OF PROCEEDS

Ex Parte Presentation of the Small Satellite Operators
December 18, 2018



Overview

- The C-Band Proceeding presents a **unique and unprecedented opportunity** for the Commission to repurpose portion of C-Band spectrum for mobile broadband

- However, for the repurposing to succeed, all stakeholders – including all satellite operators being asked to give up valuable C-band spectrum – must be treated fairly

- The CBA (and Intelsat and SES in particular) propose a **revenue-based metric for distribution** that will result in a hoarding of transition proceeds – and render the repurposing **ineffective and overly regulatory**

- The SSOs propose an alternative: a **Distribution and Scoring Model ("DSM")** that is **comprehensive, incentive-based, and equitable** to all stakeholders, including taxpayers

- A DSM-based distribution of proceeds offers an elegant and simple solution that will secure participation through **attractive incentives –** and thus avoids the heavy-handed administrative clearing on which the CBA proposal relies

DSM: Key Principles

COMPREHENSIVE PLAN	Include All Stakeholders To Ensure a Successful Repurposing
MEANINGFUL INCENTIVES	Incent all Stakeholders to Participate and Cooperate with Specific and Meaningful Economic Incentives
EQUITABLE DISTRIBUTION	Allocate Value to Stakeholders In Proportion to the Value Added to the Process

DSM Mechanics: The Proceeds Waterfall

(SP = E + T + SO)

All SALE PROCEEDS [**SP**]

EARTH STATION POOL [**E**]

Relo Costs: Cost of filter for all Earth Stations + Cost of Relo/Retune for impacted Earth Stations

Incentive: Fixed amount for each impacted Earth Station

TAXPAYER POOL [**T**]

Fixed Percentage of remaining proceeds (i.e., SP - E)

SATELLITE OPERATOR POOL [**SO**]

Company Allocation

- 1/3rd of proceeds remaining after E and T pools filled
- Equally divided among 8 companies

Satellite Allocation

- 2/3rd of proceeds remaining after E and T pools filled
- Divided among 62 satellites based on service life. Each satellite is given a Service Life Score equal to its remaining service life divided by the total remaining service life of all satellites.

CBA v. SSO Proposals: A Comparison

	CBA/I-SES Revenue Metric	DSM Proposed by SSOs
Stakeholder Representation	Driven by Intelsat and SES	Complete stakeholder representation
Meaningful Incentives	None to earth station owners, broadcasters, MVPDs, and small satellite operators	Meaningful incentives for earth station owners, broadcasters, MVPDs, and all satellite operators
Equitable Distribution	~92% of proceeds usurped by Intelsat and SES(1)	Earth Stations/Broadcasters/MVPDs: 16% Taxpayers: 17%(2) Satellite Operators: 67%
Proceeds to Medium Satellite Operators (Telesat and Eutelsat)	~8% of Proceeds(1)	Increases to 12% of Proceeds
Proceeds Shared with US Taxpayers and Companies	Less than 1%	33%
Risk of Legal and Technical Challenges and Delays	High	Low

Notes

1) Intelsat claims I/SES has more than 90% of U.S. C-band market, and Eutelsat claims approximately 5%. See "Intelsat Soars as Proposal for New Airwaves Uses Progresses," Bloomberg, (2018 June 1), https://www.bloomberg.com/news/articles/2018-06-01/intelsat-soars-as-proposal-for-new-airwaves-uses-makes-progress ("Bloomberg").

2) 20% applied to the proceeds net of the earth stations/broadcasters/MVPDs portion

Potential Results
Revenue Metric v. DSM

Inputs Used

SALE PROCEEDS [**SP**]	**200 MHz** across 320 mil Pops @ **$0.40/MHz-Pop** (see Slide 20, "Calculation of Proceeds Used in this Scenario")	• $ 25.60B
EARTH STATION POOL [**E**]	**Relo Costs**: Cost of filter for all Earth Stations + Cost of Relo/Retune for impacted Earth Stations	• Filter: $1,000 per Earth Station for **all** Earth Stations (i.e. 20,000) • Relo/Retune: $5,000 per Earth Station for **all** Earth Stations (i.e. 20,000)
	Incentive: Fixed amount for each impacted Earth Station	• Incentive: $200,000 per Earth Station assuming proceeds at $25.6B and **all** Earth Stations (i.e. 20,000)
TAX PAYER POOL[**T**]	**Fixed Percentage** of proceeds remaining after E pool filled	• 20% x (SP – E)
SATELLITE OPERATOR POOL [**SO**]	**Company Allocation [CA]** • 1/3rd of proceeds remaining after E and T pools filled • Equally divided among 8 companies (1/8 = 0.125)	• CA = 0.33 x 0.125 x (SP – E – T)
	Satellite Allocation [SA] • 2/3rd of proceeds remaining after E and T pools filled • Divided among 62 satellites based on service life. Each satellite given a Service Life Score equal to its remaining service life divided by the total remaining service life of all satellites. See Slide 15, "Total Service Life Remaining of Satellite Fleet," for details.	• SA = 0.67 x (Service Life Score) x (SP – E – T)

Comparison of Results: Revenue Metric v. DSM

Sale Proceeds
200 MHz across 320 mil Pops @ $0.40/MHz-Pop (see Slide 20)

	Revenue Metric Approach	DSM Approach
Total Proceeds	**$ 25.60**	**$ 25.60**
Total in $Bil		
Total Earth Station Pool	$ 0.12	$ 4.12
Total Tax Payer Pool	$ -	$ 4.30
Total Satellite Operator Pool	$ 25.48	$ 17.18
Total Proceeds	$ 25.60	$ 25.60
% of Split		
Total Earth Station Pool	0.5%	16.1%
Total Tax Payer Pool	0.0%	16.8%(1)
Total Satellite Operator Pool	99.5%	67.1%
Total Proceeds	100.0%	100.0%
% of Split (US vs. Non-US)		
US taypayer and US Companies	0.5%	32.9%
Non-US Companies	99.5%	67.1%
Total Proceeds	100.0%	100.0%

Note
1) 20% applied to the proceeds net of the earth stations/broadcasters/MVPDs portion

Comparison of Results: Revenue Metric v. DSM

Sale Proceeds
200 MHz across 320 mil Pops @ $0.40/MHz-Pop (see Slide 20)

	Revenue Metric Approach	DSM Approach
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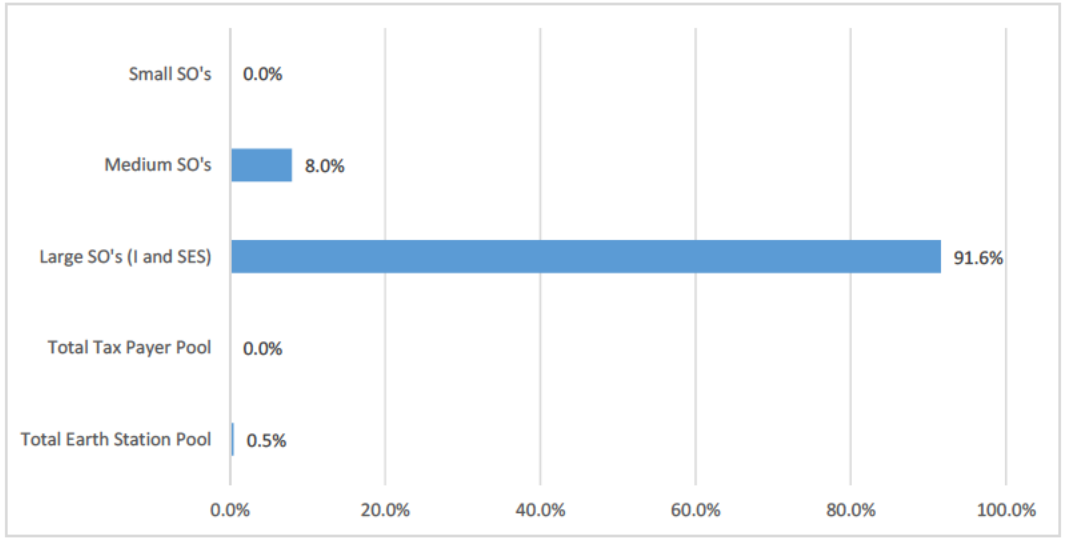
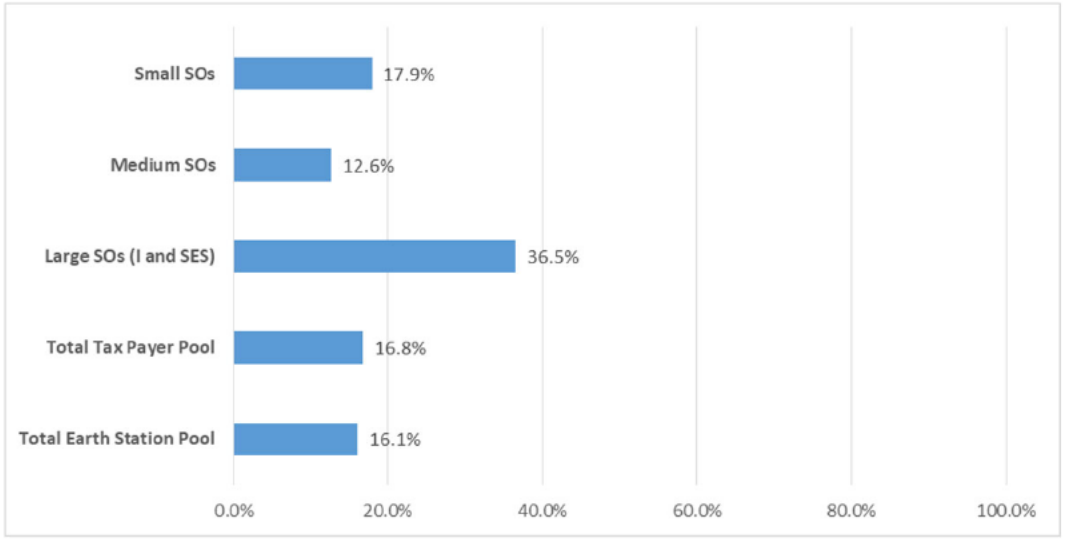
Total in $Bil		
Total Earth Station Pool	$ 0.12	$ 4.12
Total Tax Payer Pool	$ -	$ 4.30
Total Satellite Operator Pool	$ 25.48	$ 17.18
Total Proceeds	$ 25.60	$ 25.60
Satellite Operator Pool Split		
Intelsat	$ 11.72	$ 6.29
SES	$ 11.72	$ 3.06
Eutelsat	$ 1.27	$ 2.01
Telesat Canada	$ 0.76	$ 1.22
ABS	$ -	$ 1.70
Empresa Argentina	$ -	$ 1.13
Hispasat	$ -	$ 1.00
Star One	$ -	$ 0.76
Satellite Operator Pool % Split		
Intelsat	45.8%	24.6%
SES	45.8%	12.0%
Eutelsat	5.0%	7.9%
Telesat Canada	3.0%	4.8%
ABS	0.0%	6.6%
Empresa Argentina	0.0%	4.4%
Hispasat	0.0%	3.9%
Star One	0.0%	3.0%
Total Satellite Operator Pool	**99.5%**	**67.1%**

Comparison of Results: Revenue Metric v. DSM

Proceeds Distribution: Revenue Metric Approach



Proceeds Distribution: DSM Approach



C-band Key Facts

C-Band Satellite Operations: Key Facts

1. 62 satellites owned by 8 satellite operators have FCC authorization to operate in the C-band in CONUS.(1)

2. Intelsat and SES have an aging fleet. As of 2021, they will have an average satellite service life of less than 4 and 2.5 years, respectively.

3. Due to the size of their fleets, Intelsat and SES still account for 69% of the total service life remaining across all 62 C-Band satellites. Yet they would gain ~92% of satellite operator proceeds under the CBA proposal.(2)

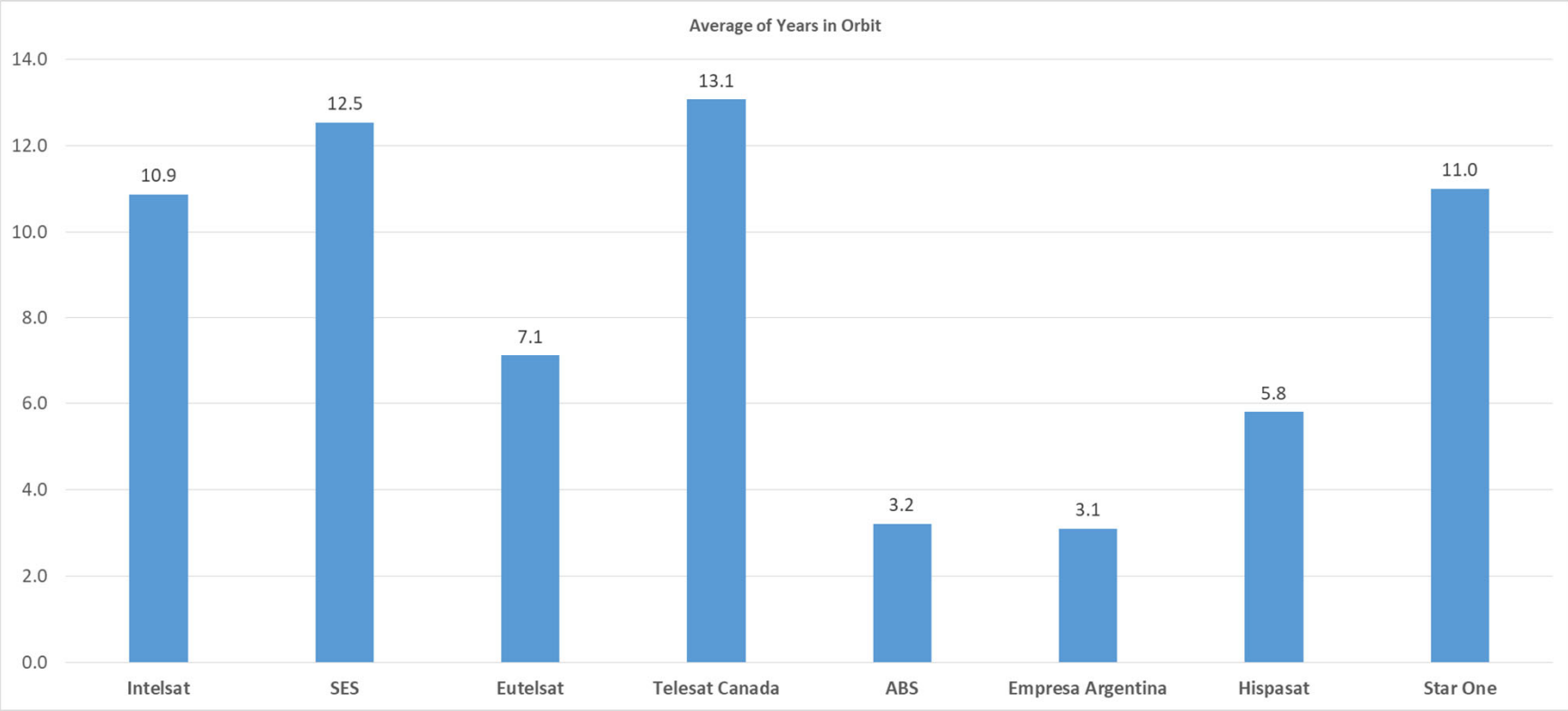
4. There are ~20,000 earth station antennas registered, which are owned by over 2,700 entities.(3)

5. Top 24 Earth Station operators own around 50% of registered antennas.

Notes

1) Source: Space Station Approval List (based on FCC data last revised September 11, 2018) with the adjustments described in Slide 26
2) Source: Bloomberg
3) Number of earth stations rounded up to 20,000 for purposes of analysis and model inputs

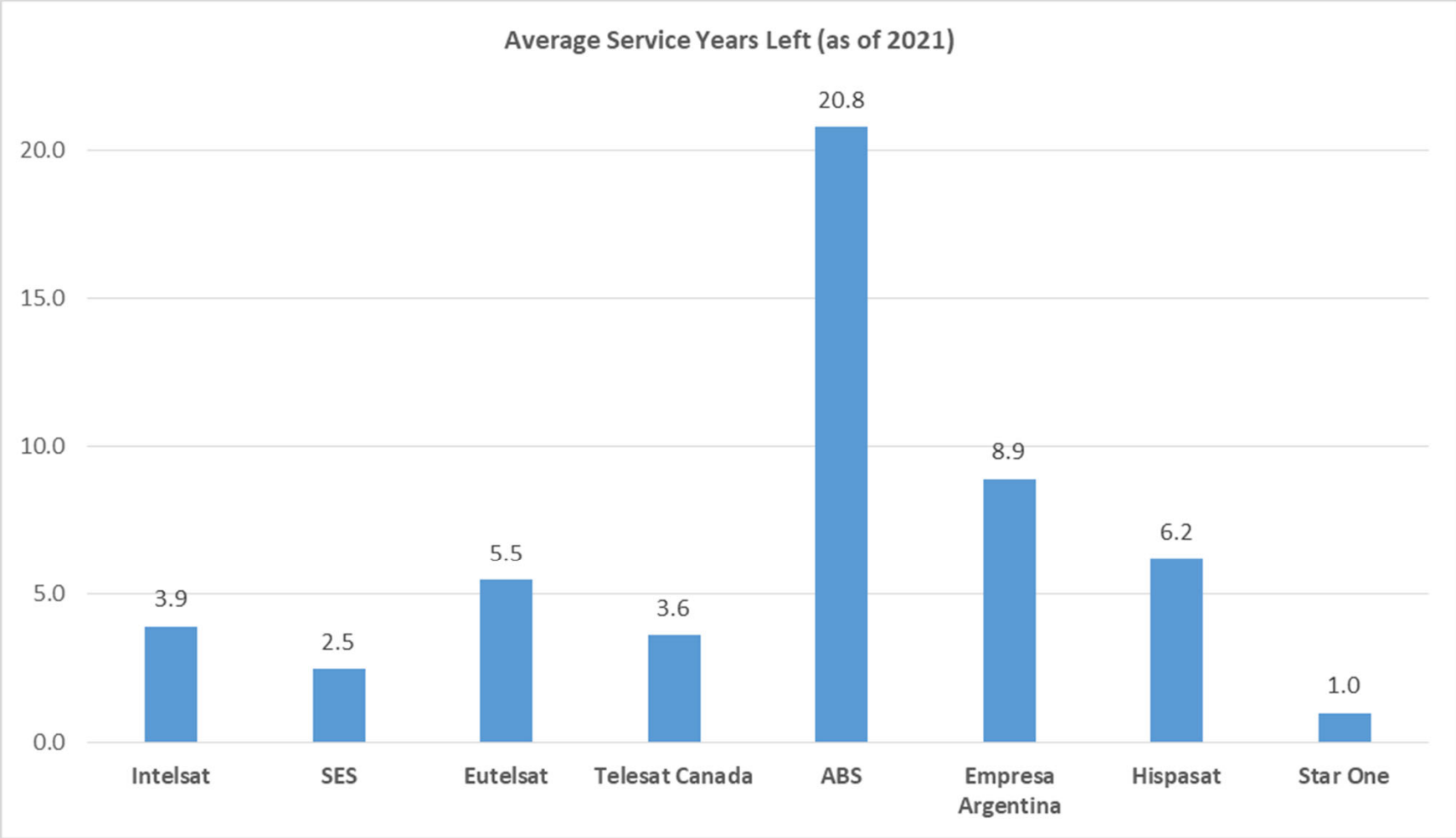
Average Age of Satellite in the Fleet



Source Data

- Space Station Approval List (based on FCC data last revised September 11, 2018) with the adjustments described in Slide 26
- Years in orbit is as of 10/31/18

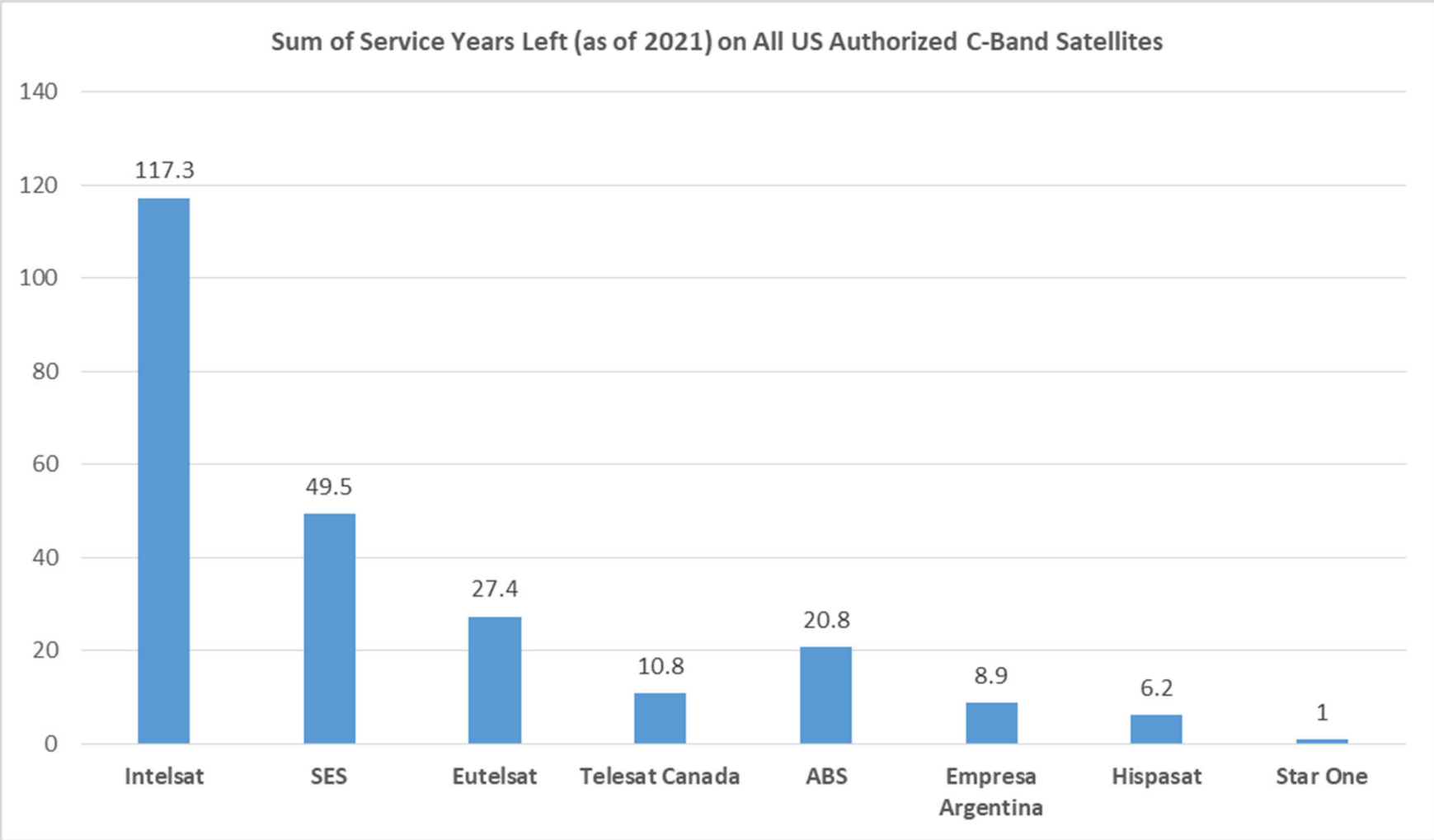
Average Service Life Remaining of Satellite in the Fleet



Source Data

- Space Station Approval List (based on FCC data last revised September 11, 2018) with the adjustments described in Slide 26
- Years in orbit is as of 10/31/18
- Useful life for most satellites from Dr. Coleman Bazelon, "Maximizing the Value of the C-Band," attached to Joint Comments of Intel, Intelsat and SES (Oct. 29, 2018)
- Remaining years = Useful life as of 10/31/21 minus years in orbit

Total Service Life Remaining of Satellite Fleet



Source Data

- Space Station Approval List (based on FCC data last revised September 11, 2018) with the adjustments described in Slide 26
- Years in orbit is as of 10/31/18
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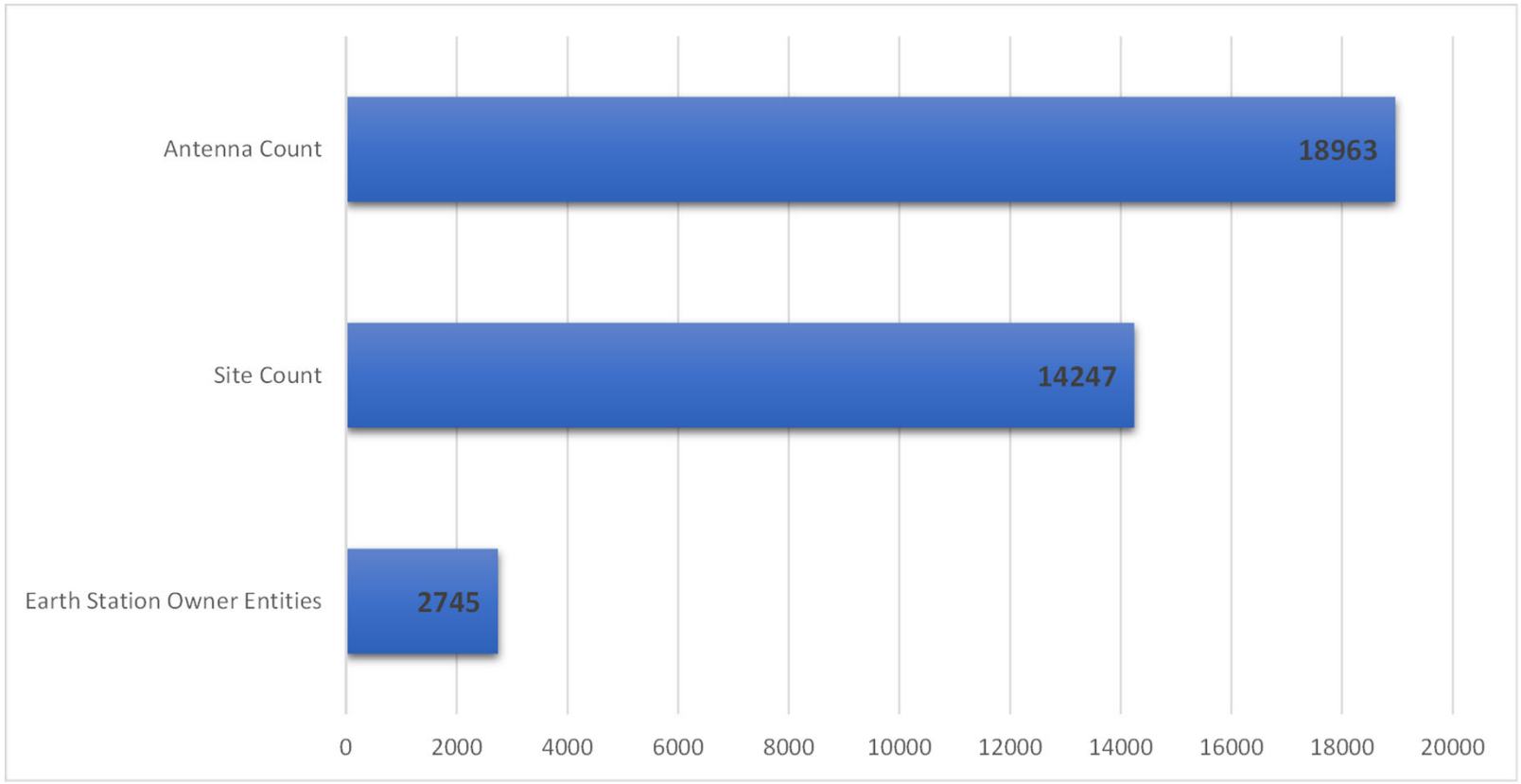
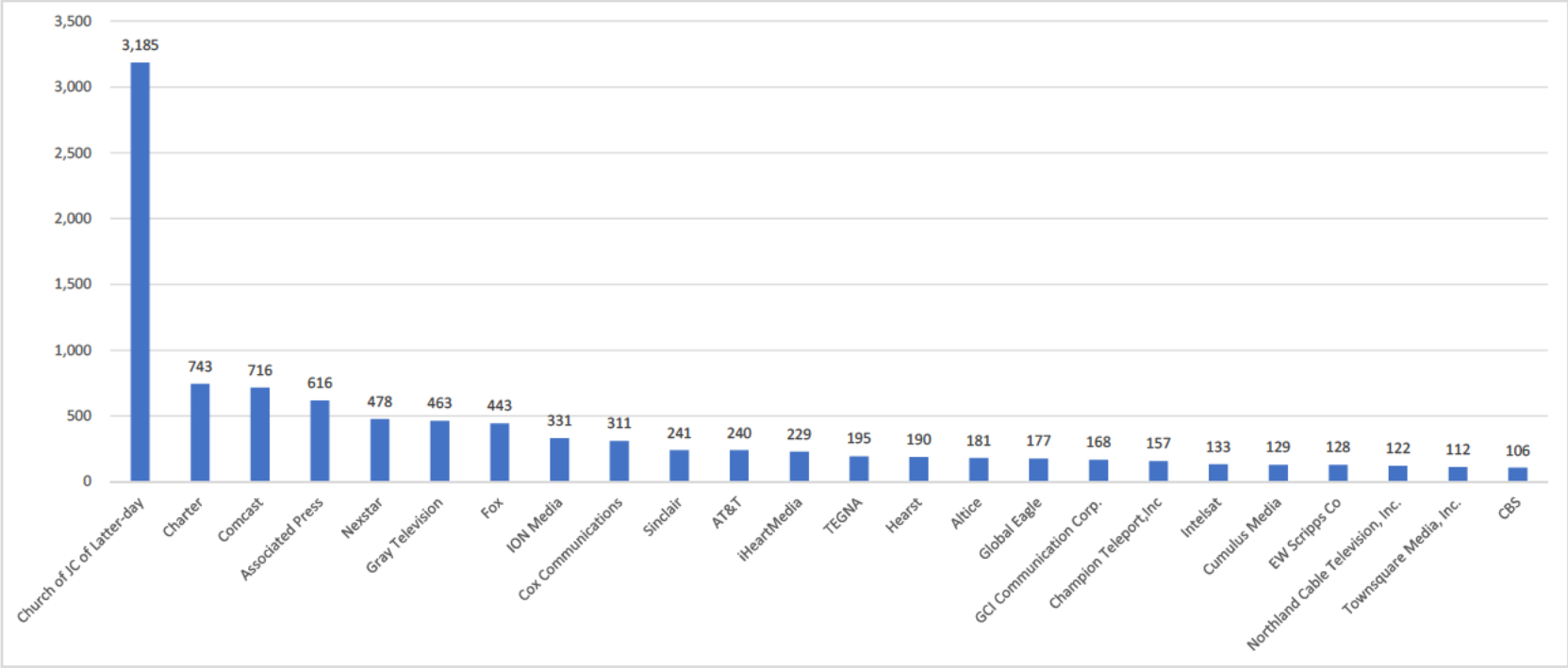
- Remaining years = Useful life as of 10/31/21 minus years in orbit

Registered Earth Stations: Fragmented Ownership



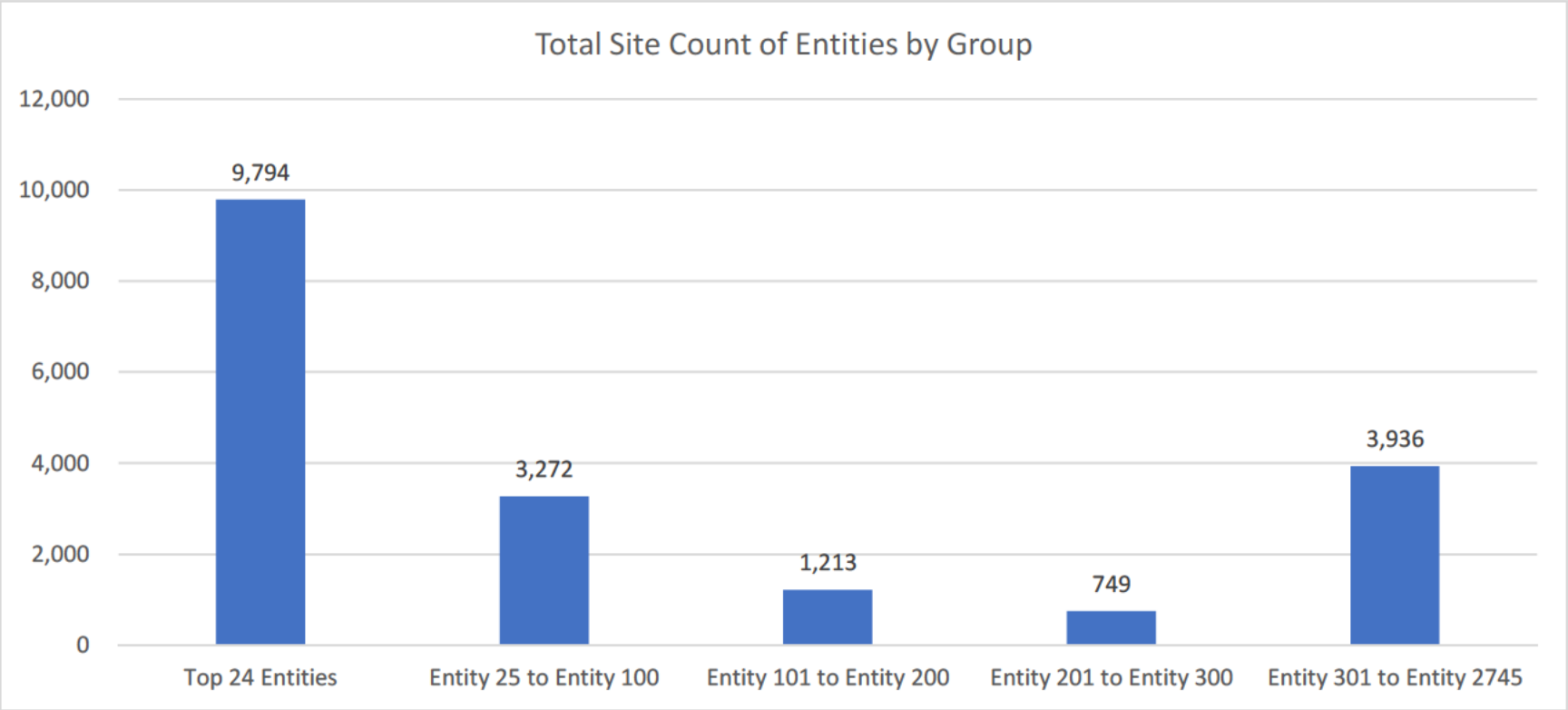
Source Data
Report from IBFS as of 11/18/18

Top 24 Entities Have >100 Antennas and Account for 50% of Antennas



Source Data
Report from IBFS as of 11/18/18

Very Large Number of Entities Have a Stake in Earth Stations



Source Data
Report from IBFS as of 11/18/18

Distribution and Scoring Model ("DSM") Details

Calculation of Proceeds Used in this Scenario

		Total Sale Proceeds ($bil)							
		Assumes 320 Mil Pops Sold							
		$/MHz-Pop							
		0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60
Cleared Spec (MHz)	100	$ 8.0	$ 9.6	$ 11.2	$ 12.8	$ 14.4	$ 16.0	$ 17.6	$ 19.2
	150	$ 12.0	$ 14.4	$ 16.8	$ 19.2	$ 21.6	$ 24.0	$ 26.4	$ 28.8
	200	$ 16.0	$ 19.2	$ 22.4	$ 25.6	$ 28.8	$ 32.0	$ 35.2	$ 38.4

Pops: Population residing in the Contiguous United States ("CONUS") estimated as of 2017 per US Census and rounded to nearest 10mil

$/MHz Pop: $0.40 used as one of many potential outcomes for demonstration purposes only. Based on most recent auction in Italy (Oct 2018) where spectrum cleared at $0.42. Rounded down for this analysis.

Distribution of Proceeds Under DSM

Sale Proceeds
200 MHz across 320 mil Pops, sold at @ $0.40/MHz-Pop

Sale Proceeds ($ mil)	**$25,600**	**SP**

E Earth Station Pool

Total Earth Stations (in '000): 20

1 Relo Cost:

	Filter	Relo Cost	Total
Qualifying Station %	100%	100%	
Qualifying No. of Station (in '000)	20	20	
Per Earth Station Proceed (in $ '000)	1	5	
Amount ($ mil)	**$20**	**$100**	**$120**

2 Incentive Payment:

Qualifying Station %	100%
Qualifying No. of Station (in '000)	20
Per Earth Station Proceed (in $ '000)	200
Amount ($ mil)	**$4,000**

Earth Station Pool Total ($ mil)	**$4,120**	**E**
Sale Proceeds Net of Earth Station Pool ($ mil)	***$21,480***	**SP - E**

T Tax Payer Pool

% to Tax Payers: 20% — **%T**

Tax Payer Pool Total ($ mil)	**$4,296**	**T = %T x (SP - E)**
Satellite Operators Total ($ mil)	**$17,184**	**SO = SP - E - T**

Distribution of Satellite Pool Under DSM

Satellite Operator Pool ($bil)								
		$ 17.18		**$ 5.67**			**$ 11.51**	
			Company Allocation		**Satellite Allocation (1)**			**Total**
	Company		33% of Total: Shared Equally Per Company		Fleet Service Life	% of Total	67% of Total: Prorated	Total
Large SO	Intelsat		$ 0.71		117.3	48.5%	$ 5.58	$ 6.29
Large SO	SES		$ 0.71		49.5	20.5%	$ 2.36	$ 3.06
Medium SO	Eutelsat		$ 0.71		27.4	11.3%	$ 1.30	$ 2.01
Small SO	ABS		$ 0.71		20.8	8.6%	$ 0.99	$ 1.70
Medium SO	Telesat Canada		$ 0.71		10.8	4.5%	$ 0.51	$ 1.22
Small SO	Empresa Argentina		$ 0.71		8.9	3.7%	$ 0.42	$ 1.13
Small SO	Hispasat		$ 0.71		6.2	2.6%	$ 0.30	$ 1.00
Small SO	Star One		$ 0.71		1	0.4%	$ 0.05	$ 0.76
	Total		**$ 5.67**		241.9	100%	**$ 11.51**	**$ 17.18**

(1) Satellite Allocation based on remaining fleet service life

Distribution of Proceeds Using Revenue Metric

Sale Proceeds
200 MHz across 320 mil Pops, sold at @ $0.40/MHz-Pop

Sale Proceeds ($ mil)	**$25,600**	**SP**

E Earth Station Pool

Total Earth Stations (in '000): 20

1 Relo Cost:

	Filter	Relo Cost	Total
Qualifying Station %	100%	100%	
Qualifying No. of Station (in '000)	20	20	
Per Earth Station Proceed (in $ '000)	1	5	
Amount ($ mil)	**$20**	**$100**	**$120**

2 Incentive Payment:

Qualifying Station %	0%
Qualifying No. of Station (in '000)	0
Per Earth Station Proceed (in $ '000)	N/A
Amount ($ mil)	**$0**

Earth Station Pool Total ($ mil)	**$120**	**E**
Sale Proceeds Net of Earth Station Pool ($ mil)	***$25,480***	**SP - E**

T Tax Payer Pool

% to Tax Payers: 0% — **%T**

Tax Payer Pool Total ($ mil)	**$0**	**T = %T x (SP - E)**
Satellite Operators Total ($ mil)	**$25,480**	**SO = SP - E - T**

Distribution of Satellite Pool Using Revenue Metric

SATELLITE OPERATOR POOL [SO] ($bil)		**$**	**25.48**
Company	By Rev.		
Intelsat	46%	$	11.72
SES	46%	$	11.72
Eutelsat	5%	$	1.27
Telesat Canada	3%	$	0.76
ABS	0%	$	-
Empresa Argentina	0%	$	-
Hispasat	0%	$	-
Star One	0%	$	-
Total		***$***	***25.48***

Revenue percentage by satellite operated estimated based on publicly available articles. Assumption of 92% of proceeds evenly split between Intelsat and SES and 5% allocated to Eutelsat based on statements of Stephen Spengler, Intelsat CEO, and Rodolphe Belmer, Eutelsat CEO, reported in "Intelsat Soars as Proposal for New Airwaves Uses Progresses," Bloomberg (2018 June 1), https://www.bloomberg.com/news/articles/2018-06-01/intelsat-soars-as-proposal-for-new-airwaves-uses-makes-progress. Allocation of 3% of proceeds to Telesat is calculated as net remainder.

Satellite Listing for Analysis

Satellite Listing Used for Analysis

Started with satellites on the FCC's Space Station Approval List (revised September 11, 2018), and performed the following adjustments:

- Removed satellites without coverage in the contiguous United States in the downlink C-band.
- Removed satellites not yet launched.
- Removed satellites that are not on the list used in Dr. Coleman Bazelon, "Maximizing the Value of the C-Band," attached to Joint Comments of Intel, Intelsat and SES (Oct. 29, 2018).
- Removed satellites that were decommissioned or have been replaced.

Satellite List

Orbital Position	Company	Satellite Name	Date In-orbit and Operating	Years in Orbit	Useful Life	Remaining Years (2021)
3 W.L.	ABS	ABS-3A	9/10/2015	3.2	27.0	20.8
81.0 W.L.	Empresa Argentina	ARSAT-2	9/30/2015	3.1	15.0	8.9
113 W.L.	Eutelsat	EUTELSAT 113 WA	5/27/2006	12.5	17.0	1.5
114.9 W.L.	Eutelsat	EUTELSAT 115 WB (SATMEX 7)	3/2/2015	3.7	15.0	8.3
116.8 W.L.	Eutelsat	EUTELSAT 117 WA (SATMEX 8)	3/27/2013	5.6	15.0	6.4
172 E.L.	Eutelsat	EUTELSAT 172B	12/7/2017	0.9	15.0	11.1
174 E.L.	Eutelsat	EUTELSAT 174A	1/3/2006	12.9	16.0	0.1
61 W.L.	Hispasat	AMAZONAS-3	2/7/2013	5.8	15.0	6.2
129 W.L.	Intelsat	GALAXY 12	4/9/2003	15.6	15.0	0.0
127 W.L.	Intelsat	GALAXY 13	10/1/2003	15.1	19.0	0.9
125 W.L.	Intelsat	GALAXY 14	1/3/2006	12.9	16.0	0.1
133 W.L.	Intelsat	GALAXY 15	10/13/2005	13.1	16.0	0.0
99 W.L.	Intelsat	GALAXY 16	8/14/2006	12.3	18.0	2.7
91 W.L.	Intelsat	GALAXY 17	7/21/2008	10.3	17.0	3.7
123 W.L.	Intelsat	GALAXY 18	6/3/2008	10.5	18.0	4.5
97 W.L.	Intelsat	GALAXY 19	11/18/2008	10.0	18.0	5.0

Source Data

- Space Station Approval List (based on FCC data last revised September 11, 2018) with the adjustments described in Slide 26
- Years in orbit is as of 10/31/18
- Useful life for most satellites from Dr. Coleman Bazelon, "Maximizing the Value of the C-Band," attached to Joint Comments of Intel, Intelsat and SES (Oct. 29, 2018)
- Remaining years = Useful life as of 10/31/21 minus years in orbit

Satellite List ... continued

Orbital Position	Company	Satellite Name	Date In-orbit and Operating	Years in Orbit	Useful Life	Remaining Years (2021)
121 W.L.	Intelsat	GALAXY 23	8/7/2003	15.3	20.0	1.7
93.1 W.L.	Intelsat	GALAXY 25 (INTELSAT AMERICAS 5)	6/30/1997	21.4	22.0	0.0
89 W.L.	Intelsat	GALAXY 28(TELSTAR 8, IA-8)	6/23/2005	13.4	17.0	0.6
95.05 W.L.	Intelsat	GALAXY 3C	6/15/2002	16.4	21.0	1.6
169 E.L.	Intelsat	HORIZONS-3e	Launched 9/25/2018, still in test phase	0.0	15.0	12.0
1 W.L.	Intelsat	INTELSAT 10-02 (PAS-10)	8/16/2004	14.3	0.0	0.0
43 W.L.	Intelsat	INTELSAT 11	1/15/2008	10.8	15.0	1.2
45 W.L.	Intelsat	INTELSAT 14	12/13/2009	8.9	18.0	6.1
180 E.L.	Intelsat	INTELSAT 18	11/7/2011	7.0	17.0	7.0
166 E.L.	Intelsat	INTELSAT 19	8/13/2012	6.3	16.0	6.7
157.1 E.L.	Intelsat	INTELSAT 1R (PAS-1R)	11/16/2000	18.0	0.0	0.0
58 W.L.	Intelsat	INTELSAT 21	10/3/2012	6.1	18.0	8.9
53 W.L.	Intelsat	INTELSAT 23	11/7/2012	6.0	18.0	9.0
31.5 W.L.	Intelsat	Intelsat 25	4/2/2010	8.6	16.0	4.4
50 W.L.	Intelsat	INTELSAT 29E	3/21/2016	2.7	15.0	9.3
55.5 W.L.	Intelsat	INTELSAT 34	10/2/2015	3.1	16.0	9.9
34.5 W.L.	Intelsat	Intelsat 35e	8/18/2017	1.3	15.0	10.7
18 W.L.	Intelsat	INTELSAT 37e	3/7/2018	0.7	15.0	11.3
29.5 W.L.	Intelsat	INTELSAT 901	11/21/2001	17.0	17.0	0.0
31.5 W.L.	Intelsat	INTELSAT 903	3/30/2002	16.6	15.0	0.0
24.5 W.L.	Intelsat	INTELSAT 905	6/5/2002	16.5	18.0	0.0
27.5 W.L.	Intelsat	INTELSAT 907 (INTELSAT AOR)	3/25/2003	15.7	0.0	0.0
20 W.L.	SES	NSS-7	4/16/2002	16.6	15.0	0.0

Satellite List ... continued

Orbital Position	Company	Satellite Name	Date In-orbit and Operating	Years in Orbit	Useful Life	Remaining Years (2021)
130.9 W.L.	SES	AMC-1	10/15/1996	22.1	15.0	0.0
135 W.L.	SES	AMC-10 (GE-10)	5/5/2004	14.5	15.0	0.0
131 W.L.	SES	AMC-11 (GE-11)	11/4/2004	14.0	15.0	0.0
139 W.L.	SES	AMC-18	12/8/2006	12.0	15.0	0.0
84.85 W.L.	SES	AMC-2	5/31/2001	17.5	15.0	0.0
72 W.L.	SES	AMC-3 (GE-4)	9/3/1997	21.2	0.0	0.0
134.9 W.L.	SES	AMC-4 (GE 3)	12/22/1999	18.9	18.0	0.0
83 W.L.	SES	AMC-6	10/22/2000	18.1	15.0	0.0
135 W.L.	SES	AMC-7	10/25/2000	18.1	18.0	0.0
139 W.L.	SES	AMC-8 / AURORA III	3/1/2001	17.7	17.0	0.0
37.45 W.L.	SES	NSS-10	4/7/2005	13.6	15.0	0.0
177 W.L.	SES	NSS-9	3/31/2009	9.6	15.0	2.4
101 W.L.	SES	SES-1	6/15/2010	8.4	15.0	3.6
104.95 W.L.	SES	SES-11	11/22/2017	1.0	15.0	11.0
47.5 W.L.	SES	SES-14	1/26/2018	0.8	15.0	11.2
87 W.L.	SES	SES-2	10/27/2011	7.1	15.0	4.9
103 W.L.	SES	SES-3	7/16/2011	7.3	15.0	4.7
22 W.L.	SES	SES-4	2/15/2012	6.8	15.0	5.2
40.5 W.L.	SES	SES-6	6/3/2013	5.5	15.0	6.5
65 W.L.	Star One	STAR ONE C1	11/14/2007	11.0	15.0	1.0
107.3 W.L.	Telesat Canada	ANIK F1R	8/1/2005	13.3	17.0	0.7
111.1 W.L.	Telesat Canada	ANIK F2	7/18/2004	14.3	23.0	5.7
118.7 W.L.	Telesat Canada	ANIK F3	4/9/2007	11.6	19.0	4.4